



Logical Arrangement - set samples - paper 1

Count the arrangements that match each rule.

1. For a school event, each ticket code uses two letters chosen from I, L, O, S, then one number chosen from 1, 2, 3, 4.

Sample codes: OO4 SS1 LO4 IL1

A letter may be used more than once.

(a) How many codes have S as the first letter?

ans _____

(b) How many different codes can be made altogether?

ans _____

(c) How many codes have two different letters and end in an even number?

ans _____

2. Sean has 5 different hats and 3 different scarves. Each outfit uses one hat and one scarf.

(a) If one particular hat and one particular scarf must both be chosen, how many outfits are possible?

ans _____

(b) If Sean must choose one particular scarf, how many outfits are possible?

ans _____

3. The word is CHAIR. Each letter is different.

(a) How many different arrangements can be made from the letters in CHAIR?

ans _____

(b) How many arrangements start with R?

ans _____



Logical Arrangement - set samples - Answers

1. **a) Answer: 16**

The first letter is fixed as S.

The possible letter pairs are: SI, SL, SO, SS.

Each pair can be followed by 4 numbers.

4 letter pairs x 4 numbers = 16.

b) Answer: 64

There are 4 choices for the first letter.

There are 4 choices for the second letter because repeats are allowed.

There are 4 choices for the number.

$4 \times 4 \times 4 = 64$.

c) Answer: 24

The two letters must be different, so there are 4 choices for the first letter and 3 choices for the second letter.

That gives $4 \times 3 = 12$ letter pairs.

The even numbers are: 2, 4.

12 letter pairs x 2 even numbers = 24.

2. **a) Answer: 1**

The hat is fixed and the scarf is fixed.

There is only one possible combination.

b) Answer: 5

One scarf is already fixed.

Only the hats still need to be chosen.

There are 5 hat choices, so the answer is 5.

3. **a) Answer: 120**

The word CHAIR has 5 different letters.

There are 5 choices for the first position, then one fewer choice for each later position.

$5 \times 4 \times 3 \times 2 \times 1 = 120$.

b) Answer: 24

The first position is fixed as R.

There are 4 letters left to arrange.

$4 \times 3 \times 2 \times 1 = 24$.